

RECEIVED

APR 01 2002

TECH CENTER 1600/2900



OICE

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/056,405

DATE: 02/15/2002

TIME: 14:44:34

Input Set : A:\N7841.app

Output Set: N:\CRF3\02152002\J056405.raw

ENTERED

3 <110> APPLICANT: ZWIEBEL, LAURENCE J.
 5 <120> TITLE OF INVENTION: MOSQUITO OLFATORY GENES, POLYPEPTIDES, AND METHODS OF
 6 USE THEREOF
 8 <130> FILE REFERENCE: N7841
 C--> 10 <140> CURRENT APPLICATION NUMBER: US/10/056,405
 C--> 11 <141> CURRENT FILING DATE: 2002-01-24
 13 <150> PRIOR APPLICATION NUMBER: 60/264,649
 14 <151> PRIOR FILING DATE: 2001-01-26
 16 <160> NUMBER OF SEQ ID NOS: 23
 18 <170> SOFTWARE: PatentIn Ver. 2.1
 20 <210> SEQ ID NO: 1
 21 <211> LENGTH: 1964
 22 <212> TYPE: DNA
 23 <213> ORGANISM: Anopheles gambiae
 25 <400> SEQUENCE: 1
 26 acaggaacga cgggtgtgat ccctccactg gtggtgacac gaatcataag cattatttca 60
 27 tacctaaaaa acaaaatcta caaaaaaaag cttcattccc atcgaaaaaa ctttcttgtg 120
 28 aaatcaaccg agctaacaaa caacatcctg tgcaaaatct agcagtgaag gtgtgatata 180
 29 gtatacctgt acctgtaaac cgttgtgcgc gtgtgtgcct ttgtgtatca attttgtgga 240
 30 aaacagaaaa tacatcaaaa tgggtttacaa ttcaaaagtc ttcaagaagt gcgcccctaa 300
 31 tggaaagggt acgctgtaca tgggcaagcg tgactttgta gaccacgttt ccggcggtga 360
 32 accgatcgat ggtatcgctg tcctcgatga tgagtacatt cgtgacaacc gtaaggattt 420
 33 cggtcagatt gtctgcagtt tccgctacgg ccgcaagag gacgaggtga tgggactaaa 480
 34 cttccagaag gagttatgcc tcgcttccga acagatctac ccgctcggg aaaagtcgga 540
 35 caaggagcag accaagctcc aggagcgact gctgaagaag ctgggttcga acgccatccc 600
 36 gttcacgttc aacatctcgc cgaatgctcc gtcttcgggc acgctgcagc agggcggaaga 660
 37 tgataatgga gaccgtgcgc gtgtgtcgta ctacgtgaag atctttgccg gtgagtcgga 720
 38 aaccgatcgt acgcaccgtc gcagcaccgt tacgctcggc atacgcaaga tccagttcgc 780
 39 accgaccaag cagggccagc agccgtgcac gctggtgcgc aaggacttta tgctaagccc 840
 40 gggagagctg gagctcgagg tcacactaga caagcagctg tacctgcacg gggagcgaat 900
 41 aggcgtcaac atctgcatcc gcaacaactc gaacaaaatg gtcaagaaga ttaaggccat 960
 42 ggtccagcag ggtgtggatg tgggtgctgt ccagaatggt agctaccgca acacagtggc 1020
 43 atcgctggag actagcgagg gttgccccat tcagcccggc tccagtctgc agaaggtaat 1080
 44 gtacctcagc ccgctgctgt cctcgaacaa gcagcgacgt ggcacgccc tggacgggtca 1140
 45 gatcaagcgt caggatcagt gtttgccctc gacaaccctc ttggctcaac cggatcagcg 1200
 46 agatgctttc ggcgttatca tatcgatgc cgtaaagggt aagcttttcc tcggcgcaact 1260
 47 cggcggcgag ctgtcggcgg aacttccatt tgtgctgat caccctaaag ccggcaccac 1320
 48 ggctaaggct atccatgccg acagccaggc cgacgtagaa actttccgac aggatacaat 1380
 49 cgaccagcag gcatcagttg actttgaata gacgacgcaa cggtttgga atgctacctt 1440
 50 ctaccccagg catgggctaa cagcagcaac gaactactac tactaagcat aaaaaacagg 1500
 51 aaaaaaaatg gaaaacttaa aaaatggatc atacaaccga acgcaaacga cctacgacga 1560
 52 tcgatctcac ttccccgtct ttttcatcct aagcaataga acgatggtag aaaaggaaga 1620
 53 taaagatgga gagaaagtca cgtgtatcaa tgacgacgac taccaaaact gaagacgtaa 1680

RECEIVED

APR 01 2002

TECH CENTER 1600/2900

RAW SEQUENCE LISTING

DATE: 02/15/2002

PATENT APPLICATION: US/10/056,405

TIME: 14:44:34

Input Set : A:\N7841.app

Output Set: N:\CRF3\02152002\J056405.raw

```

54 cacatgttcc ccagcgagcg gtaactgttc tgttctgaca ccttcgctc gacaatgtac 1740
55 cttttaaaaa catacaaat agaagtcgtc ttactacct tcaaccaatc cagccacttt 1800
56 ggtatataact tttcatagaa tccttctgag cgcaaggacc ctattgaaat tcagtgttat 1860
57 tttgtaactg cgaccaaagtg cctagctgaa tgttggtgaa cgagttatgt acatcaaaag 1920
58 attgaataaa acaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 1964
61 <210> SEQ ID NO: 2
62 <211> LENGTH: 383
63 <212> TYPE: PRT
64 <213> ORGANISM: Anopheles gambiae
66 <400> SEQUENCE: 2
67 Met Val Tyr Asn Phe Lys Val Phe Lys Lys Cys Ala Pro Asn Gly Lys
68 1 5 10 15
70 Val Thr Leu Tyr Met Gly Lys Arg Asp Phe Val Asp His Val Ser Gly
71 20 25 30
73 Val Glu Pro Ile Asp Gly Ile Val Val Leu Asp Asp Glu Tyr Ile Arg
74 35 40 45
76 Asp Asn Arg Lys Val Phe Gly Gln Ile Val Cys Ser Phe Arg Tyr Gly
77 50 55 60
79 Arg Glu Glu Asp Glu Val Met Gly Leu Asn Phe Gln Lys Glu Leu Cys
80 65 70 75 80
82 Leu Ala Ser Glu Gln Ile Tyr Pro Arg Pro Glu Lys Ser Asp Lys Glu
83 85 90 95
85 Gln Thr Lys Leu Gln Glu Arg Leu Leu Lys Lys Leu Gly Ser Asn Ala
86 100 105 110
88 Ile Pro Phe Thr Phe Asn Ile Ser Pro Asn Ala Pro Ser Ser Val Thr
89 115 120 125
91 Leu Gln Gln Gly Glu Asp Asp Asn Gly Asp Pro Cys Gly Val Ser Tyr
92 130 135 140
94 Tyr Val Lys Ile Phe Ala Gly Glu Ser Glu Thr Asp Arg Thr His Arg
95 145 150 155 160
97 Arg Ser Thr Val Thr Leu Gly Ile Arg Lys Ile Gln Phe Ala Pro Thr
98 165 170 175
100 Lys Gln Gly Gln Gln Pro Cys Thr Leu Val Arg Lys Asp Phe Met Leu
101 180 185 190
103 Ser Pro Gly Glu Leu Glu Leu Glu Val Thr Leu Asp Lys Gln Leu Tyr
104 195 200 205
106 Leu His Gly Glu Arg Ile Gly Val Asn Ile Cys Ile Arg Asn Asn Ser
107 210 215 220
109 Asn Lys Met Val Lys Lys Ile Lys Ala Met Val Gln Gln Gly Val Asp
110 225 230 235 240
112 Val Val Leu Phe Gln Asn Gly Ser Tyr Arg Asn Thr Val Ala Ser Leu
113 245 250 255
115 Glu Thr Ser Glu Gly Cys Pro Ile Gln Pro Gly Ser Ser Leu Gln Lys
116 260 265 270
118 Val Met Tyr Leu Thr Pro Leu Leu Ser Ser Asn Lys Gln Arg Arg Gly
119 275 280 285
121 Ile Ala Leu Asp Gly Gln Ile Lys Arg Gln Asp Gln Cys Leu Ala Ser
122 290 295 300
124 Thr Thr Leu Leu Ala Gln Pro Asp Gln Arg Asp Ala Phe Gly Val Ile

```

RAW SEQUENCE LISTING

DATE: 02/15/2002

PATENT APPLICATION: US/10/056,405

TIME: 14:44:34

Input Set : A:\N7841.app

Output Set: N:\CRF3\02152002\J056405.raw

```

125 305          310          315          320
127 Ile Ser Tyr Ala Val Lys Val Lys Leu Phe Leu Gly Ala Leu Gly Gly
128          325          330          335
130 Glu Leu Ser Ala Glu Leu Pro Phe Val Leu Met His Pro Lys Pro Gly
131          340          345          350
133 Thr Lys Ala Lys Val Ile His Ala Asp Ser Gln Ala Asp Val Glu Thr
134          355          360          365
136 Phe Arg Gln Asp Thr Ile Asp Gln Gln Ala Ser Val Asp Phe Glu
137          370          375          380
140 <210> SEQ ID NO: 3
141 <211> LENGTH: 1239
142 <212> TYPE: DNA
143 <213> ORGANISM: Anopheles gambiae
145 <400> SEQUENCE: 3
146 atgaagctga acaaaactgaa cccacggtgg gatgcgtacg atcgacggga ttcgttctgg 60
147 ttgcagttgc tttgtttgaa atatttaggc ctatggccac cggaagatac ggatcaggca 120
148 acgcggaacc ggtacatcgc gtacggttgg gctttgcgga tcatgtttct acatctgtac 180
149 gctctaacgc aagccctata cttcaaggat gtgaaggata ttaatgacat cgcaaatgca 240
150 ttgttcgtgc ttatgactca agtgacgttg atctacaagc tggaaaagtt taactacaac 300
151 atcgacgga tttaggcttg tctgcgcaag cttaactgca cactgtatca cccgaaacag 360
152 cgcgaagaat tcagccccgt tttacaatcg atgagtggag tgttttggct gatgatcttt 420
153 ctcatgtttg tggctatctt caccatcatc atgtggggtta tgcgccagc cttcgacaat 480
154 gaacgtcgtc tgcccggtgc ggctgggttc ccggtggact atcaccattc ggacatagt 540
155 tacggtgtac tgttctctga tcaaaccatt ggaatcgta tgagcgcaac gtacaacttc 600
156 tcgaccgata ccatgttttc cggttgatg ctacacataa atggacaaat tgtgcggctt 660
157 ggtagtatgg ttaaaaagct tggacatgac gtccctcccg aacgccaatt ggtcgcaacg 720
158 gatgcggaat ggaaagagat gcgaaagcgc atcgaccatc actccaaagt gtacgggtacg 780
159 atgtacgcta aagtaacgga gtgtgtgctg tttcacaaag acatcttaag gatctatctt 840
160 cgcgcaagta tgcgcgtctg taattatcat ttgtatgaca ctgctgcaac taccgggggc 900
161 gatgttacga tggccgatct gctgggctgt ggggtctatt tgctagtaaa gacatcgcaa 960
162 gtgtttatatt tctgttacgt agggaatgaa atctcctata cgacggataa atttacagag 1020
163 tttgtttgggt tttccaacta cttcaagttc gataagcgta ccagccaagc aatgatattt 1080
164 tttctgcaaa tgactcttaa agatgttcac atcaagggtg gaagtgtctt gaaggttacg 1140
165 ctaaattcttc acacattttt gcagattatg aagctatcgt actcctatct ggccgtactt 1200
166 cagagcatgg aatcagagta atggtgttaa tatccttaa 1239
169 <210> SEQ ID NO: 4
170 <211> LENGTH: 394
171 <212> TYPE: PRT
172 <213> ORGANISM: Anopheles gambiae
174 <400> SEQUENCE: 4
175 Met Lys Lys Asp Ser Phe Phe Lys Met Leu Asn Lys His Arg Trp Ile
176 1 5 10 15
178 Leu Cys Leu Trp Pro Pro Glu Asp Thr Asp Gln Ala Thr Arg Asn Arg
179 20 25 30
181 Tyr Ile Ala Tyr Gly Trp Ala Leu Arg Ile Met Phe Leu His Leu Tyr
182 35 40 45
184 Ala Leu Thr Gln Ala Leu Tyr Phe Lys Asp Val Lys Asp Ile Asn Asp
185 50 55 60
187 Ile Ala Asn Ala Leu Phe Val Leu Met Thr Gln Val Thr Leu Ile Tyr

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/056,405

DATE: 02/15/2002

TIME: 14:44:34

Input Set : A:\N7841.app

Output Set: N:\CRF3\02152002\J056405.raw

```

188 65          70          75          80
190 Lys Leu Glu Lys Phe Asn Tyr Asn Ile Ala Arg Ile Gln Ala Cys Leu
191          85          90          95
193 Arg Lys Leu Asn Cys Thr Leu Tyr His Pro Lys Gln Arg Glu Glu Phe
194          100          105          110
196 Ser Pro Val Leu Gln Ser Met Ser Gly Val Phe Trp Leu Met Ile Phe
197          115          120          125
199 Leu Met Phe Val Ala Ile Phe Thr Ile Ile Met Trp Val Met Ser Pro
200          130          135          140
202 Ala Phe Asp Asn Glu Arg Arg Leu Pro Val Pro Ala Trp Phe Pro Val
203 145          150          155          160
205 Asp Tyr His His Ser Asp Ile Val Tyr Gly Val Leu Phe Leu Tyr Gln
206          165          170          175
208 Thr Ile Gly Ile Val Met Ser Ala Thr Tyr Asn Phe Ser Thr Asp Thr
209          180          185          190
211 Met Phe Ser Gly Leu Met Leu His Ile Asn Gly Gln Ile Val Arg Leu
212          195          200          205
214 Gly Ser Met Val Lys Lys Leu Gly His Asp Val Pro Pro Glu Arg Gln
215          210          215          220
217 Leu Val Ala Thr Asp Ala Glu Trp Lys Glu Met Arg Lys Arg Ile Asp
218 225          230          235          240
220 His His Ser Lys Val Tyr Gly Thr Met Tyr Ala Lys Val Thr Glu Cys
221          245          250          255
223 Val Leu Phe His Lys Asp Ile Leu Arg Ile Tyr Leu Arg Ala Ser Met
224          260          265          270
226 Arg Val Cys Asn Tyr His Leu Tyr Asp Thr Ala Ala Thr Thr Gly Gly
227          275          280          285
229 Asp Val Thr Met Ala Asp Leu Leu Gly Cys Gly Val Tyr Leu Leu Val
230          290          295          300
232 Lys Thr Ser Gln Val Phe Ile Phe Cys Tyr Val Gly Asn Glu Ile Ser
233 305          310          315          320
235 Tyr Thr Asp Lys Phe Thr Glu Phe Val Gly Phe Ser Asn Tyr Phe Lys
236          325          330          335
238 Phe Asp Lys Arg Thr Ser Gln Ala Met Ile Phe Phe Leu Gln Met Thr
239          340          345          350
241 Leu Lys Asp Val His Ile Lys Val Gly Ser Val Leu Lys Val Thr Leu
242          355          360          365
244 Asn Leu His Thr Phe Leu Gln Ile Met Lys Leu Ser Tyr Ser Tyr Leu
245          370          375          380
247 Ala Val Leu Gln Ser Met Glu Ser Glu Glx
248 385          390
251 <210> SEQ ID NO: 5
252 <211> LENGTH: 1142
253 <212> TYPE: DNA
254 <213> ORGANISM: Anopheles gambiae
256 <400> SEQUENCE: 5
257 atgctgatcg aagagtgtcc gataattggt gtcaatgtgc gagtgtggct gttctggtcg 60
258 tatctgcggc ggcgcggtt gtcccgcttt ctggtcggct gcatcccggt cgcgtgctg 120
259 aacgttttcc agttcctgaa gctgtactcg tcctggggcg acatgagcga gctcatc 180

```

RAW SEQUENCE LISTING

DATE: 02/15/2002

PATENT APPLICATION: US/10/056,405

TIME: 14:44:34

Input Set : A:\N7841.app

Output Set: N:\CRF3\02152002\J056405.raw

```

260 aacggataact ttaccgtgct gtactttaac ctcgtctctcc gaacctcctt tctcgtgacg 240
261 aatcgacgga aatttgagac attttttgaa ggcgttgccg ccgagtagcg tctcctcgag 300
262 aaaaatgacg acatccgacc cgtgctggag cggtagacac ggcgggggacg catgctatcg 360
263 atatcgaatc tgtggctcgg cgccttcatt agtgctgctt ttgtgacctt tctctgtttt 420
264 gtgcccgggc gcggcctacc gtacggcgctc acgataccgg gcgtggacgt gctggccacc 480
265 ccgacctacc aggtcgtggt tgtgctgcag gtttacctta ccttccccgc ctgctgcatg 540
266 tacatcccggt tcaccagctt ctacgcgacc tgcacgctgt ttgcgctcgt ccagatagcg 600
267 gccctaaagc aacggctcgg acgcttgagg cgccacagcg gcacgatggc ttcgaccgga 660
268 cacagcgccg gcacactggt cgcgcgagctg aaggagtgtc taaagtatca caaacaatc 720
269 atccaatatg ttcatgatct caactcactc gtcacccatc tgtgtctgct ggagttcctg 780
270 tcgttcggga tgatgctgtg cgcactgctg tttctgctaa gcattagcaa tcagctggca 840
271 cagatgataa tgattggatc gtacatcttc atgatactct cgcagatggt tgccttctat 900
272 tggcatgcga acgagggtact ggagcagagc ctaggcattg gcgatgccat ttacaatgga 960
273 gcgtggcccg actttgagga accgataagg aaacggttga ttctaattat tgcacgtgct 1020
274 cagcgaccga tggtggttaag attaaagtcg gcaacgtgta cccgatgacg ttggaaatgt 1080
275 ttcaaaaatt gctcaacgtg tcctactcct atttcacact gctgcgccga gtgtacaact 1140
276 aa 1142
279 <210> SEQ ID NO: 6
280 <211> LENGTH: 380
281 <212> TYPE: PRT
282 <213> ORGANISM: Anopheles gambiae
284 <400> SEQUENCE: 6
285 Met Leu Ile Glu Glu Cys Pro Ile Ile Gly Val Asn Val Arg Val Trp
286 1 5 10 15
288 Leu Phe Trp Ser Tyr Leu Arg Arg Pro Arg Leu Ser Arg Phe Leu Val
289 20 25 30
291 Gly Cys Ile Pro Val Ala Val Leu Asn Val Phe Gln Phe Leu Lys Leu
292 35 40 45
294 Tyr Ser Ser Trp Gly Asp Met Ser Glu Leu Ile Ile Asn Gly Tyr Phe
295 50 55 60
297 Thr Val Leu Tyr Phe Asn Leu Val Leu Arg Thr Ser Phe Leu Val Ile
298 65 70 75 80
300 Asn Arg Arg Lys Phe Glu Thr Phe Phe Glu Gly Val Ala Ala Glu Tyr
301 85 90 95
303 Ala Leu Leu Glu Lys Asn Asp Asp Ile Arg Pro Val Leu Glu Arg Tyr
304 100 105 110
306 Thr Arg Arg Gly Arg Met Leu Ser Ile Ser Asn Leu Trp Leu Gly Ala
307 115 120 125
309 Phe Ile Ser Ala Cys Phe Val Thr Tyr Pro Leu Phe Val Pro Gly Arg
310 130 135 140
312 Gly Leu Pro Tyr Gly Val Thr Ile Pro Gly Val Asp Val Leu Ala Thr
313 145 150 155 160
315 Pro Thr Tyr Gln Val Val Phe Val Leu Gln Val Tyr Leu Thr Phe Pro
316 165 170 175
318 Ala Cys Cys Met Tyr Ile Pro Phe Thr Ser Phe Tyr Ala Thr Cys Thr
319 180 185 190
321 Leu Phe Ala Leu Val Gln Ile Ala Leu Lys Gln Arg Leu Gly Arg
322 195 200 205
324 Leu Gly Arg His Ser Gly Thr Met Ala Ser Thr Gly His Ser Ala Gly

```

VERIFICATION SUMMARY

DATE: 02/15/2002

PATENT APPLICATION: US/10/056,405

TIME: 14:44:35

Input Set : A:\N7841.app

Output Set: N:\CRF3\02152002\J056405.raw

L:10 M:270 C: Current Application Number differs, Replaced Application Number

L:11 M:271 C: Current Filing Date differs, Replaced Current Filing Date